

1. A method for determining the location of a mobile station, comprising:

- receiving a plurality of simulcast signals from respective base stations;
- determining relative time of arrival information for the received plurality of simulcast signals; and
- determining the position of the mobile station.

2. The method according to claim 1, further including determining the relative time of arrival information using characteristics inherent in the received signal.

3. The method according to claim 2, wherein the inherent characteristics of the received signal include time dispersion due to simultaneous transmission of the substantially identical simulcast signals.

4. The method according to claim 3, wherein the received simulcast signals having an OFDM modulation format.

5. The method according to claim 4, further including estimating channel frequency response.

6. The method according to claim 5, further including transforming the channel frequency response to obtain the relative time of arrival information.

7. The method according to claim 1, further including receiving base station ID information in the respective simulcast signals.

8. The method according to claim 1, further receiving GPS signals for determining the relative time of arrival information.

9. The method according to claim 1, further including utilizing Doppler shift information associated with movement of the mobile station to determine the position of the mobile station.

10. The method according to claim 1, further including computing a locus of points having a distance from first and second ones of the plurality of base stations that differs by a signal time of arrival difference for signals from the first and second ones of the plurality of base stations.

11. The method according to claim 10, further including further loci of points for further pairs of base stations.

12. The method according to claim 1, further including computing the relative time of arrival information using differential in frequency information.

13. The method according to claim 1, further including receiving a signal from a first one of the plurality of base stations to a second one of the plurality of base stations for identifying the simulcast signals from respective first and/or second ones of the plurality of base stations.

14. The method according to claim 1, further including transmitting the mobile station position from the mobile station to one or more of the plurality of base stations.

15. The method according to claim 14, further including transmitting the mobile station position from the one or more plurality of base stations to a network server associated with the one or more plurality of base stations.

16. The method according to claim 1, further including broadcasting information associated with the mobile station position.

17. The method according to claim 15, further including broadcasting location-specific advertisements.

18. A method for receiving location information for a mobile station, comprising:
transmitting simulcast signals to the mobile station; and
receiving mobile station location information from the mobile station determined from relative time of arrival information for the simulcast signals.

19. The method according to claim 18, further including transmitting simulcast OFDM signals.

20. The method according to claim 19, further including transmitting location-specific information to the mobile station.

21. A mobile station, comprising:
a receiver for receiving simulcast signals from a plurality of base stations; and
a processor for determining time of arrival information for the received simulcast signals and identifying a location of the mobile station.

22. The mobile station according to claim 21, wherein the simulcast signals are OFDM signals.

23. The mobile station according to claim 21, further including a transmitter for transmitting the mobile station location to one or more of the plurality of base stations.

24. A wireless network for providing location specific information to a mobile station, comprising:
a plurality of base stations for transmitting simulcast signals;
a mobile station for receiving the simulcast signals and determining a location of the mobile station.

25. The network according to claim 24, wherein the simulcast signals are OFDM signals.

26. The network according to claim 24, further including at least one network server for providing location-specific information to the mobile station based upon mobile station location information provided to one or more of the plurality of base stations.

27. A wireless network, comprising:
a plurality of base stations for transmitting simulcast signals to mobile stations and receiving mobile station location information to broadcast location specific information to the mobile stations.